Amendments to the Specification

Please **add** the following paragraph at page 1, line 3:

-- This application claims the benefit, under 35 U.S.C. § 365 of International Application PCT/FR03/00496, filed February 17, 2003, which was published in accordance with PCT Article 21(2) on September 4, 2003 in French and which claims the benefit of French patent application No. 0202328, filed February 25, 2002.

Field of the Invention --

Please **add** the following **new** paragraphs after the paragraph ending on line 5 on page 1:

-- **Brief Description of the Drawings**

Preferred embodiments of the present invention will be described below in more detail, with reference to the accompanying drawings, in which:Figure 1 is a partial section of a panel according to one embodiment of the invention;

Figure 2 is a schematic front view of a panel according to one embodiment of the invention;

Figure 3 is a schematic rear view of the panel of Figures 1 and 2;

Figures 4 to 7 illustrate a sustain phase for driving the panel of Figures 1 to 3 according to one embodiment of the invention.

Figures 8 and 9 illustrate an address phase for driving the panel of Figures 1 to 3 according to one embodiment of the invention.

Figure 10 is a diagram illustrating voltage timing for electrodes corresponding to three respective arrays Y, Y' and X of the panel of Figures 1 to 3;

Figure 11 depicts the voltages timing of Fig. 10 in more detail.

Figure 12 depicts in more detail than in Figure 10 the voltage difference between the coplanar electrodes of the panel of Figures 1 to 3 during the sustain phase;

Figures 13A to 15A illustrate a phase for driving the panel of Figure 19 according to one embodiment of the invention.

Figures 16A to 18A illustrate an address phase for driving the panel of Figure 19 according to one embodiment of the invention.

Figure 19 depicts, in a form similar to that of Figure 1, the plasma panel according to one embodiment of the invention; and

Figure 20 illustrates an address phase related to Figure 11

Detailed Description --

Please **replace** the paragraphs beginning at page 1, line 6 with the following **rewritten** paragraphs:

--An embodiment of the invention provides an ~~An~~ AC plasma display panel (or PDP) with a memory effect. An AC PDP according to an embodiment of the invention generally comprises two parallel plates. The plates ~~leaving between them~~ are spaced apart so as to contain ~~a space containing~~ a discharge gas~~;~~ between the plates. In an embodiment of the invention, the discharge gas is~~,~~ generally on the internal faces of these plates, such a panel has several arrays of electrodes. ~~:~~

~~generally~~ According to one embodiment of the invention two arrays of crossed electrodes are used for addressing, at the intersections of which, in the space between the plates, luminous discharge regions are defined~~; and~~ . At

~~at~~ least two arrays of electrodes are used for sustaining, these arrays being covered with a dielectric layer, especially for providing a memory effect.

In ~~the case of~~ an embodiment including coplanar panels, the two sustain arrays are formed from electrodes placed on the same plate in parallel general directions; each electrode of a sustain array forms with an electrode of the other sustain array a pair of electrodes defining between them a succession of luminous discharge regions, generally distributed along a line of pixels of the panel.

In ~~the case of~~ some embodiments of the invention including matrix panels, the two sustain arrays are ~~no longer~~ not coplanar and are located on different plates. --

Please **replace** the paragraphs beginning at page 2, line 7 with the following **rewritten** paragraphs:

-- ~~firstly~~ First, a selective addressing step Q_W ~~whose purpose~~ is carried out. The purpose of the selective addressing step is to deposit electrical charges on that portion of the dielectric layer of the discharge regions to be activated, by applying at least one voltage pulse between the address electrodes intersecting in these regions; ~~and then~~ Further,

[[-]] a non-selective sustain step Q_S ~~during which~~ is carried out. During this step a succession of voltage pulses is applied between the electrodes of the sustain pairs so as to cause a succession of luminous discharges only in the discharge regions which have been addressed beforehand.

~~Certain~~ In various embodiments of the invention, at least one of scans ~~or~~ and subscans of the panel may furthermore include other phases, such as erase or priming phases, which involve the application of specific voltage pulses~~; these~~ . These pulses ~~generally~~ in some embodiments of the invention have specific characteristics, not only as regards the hold voltage level (high or low) but also as regards the voltage rise and/or fall ramps.

Applying voltage pulses between the electrodes of the different arrays of the panel, such as those that have just been described, causes cycles of charging and of discharging of the electrical capacitor that these electrodes form between them~~; since~~ . This is because the sustain steps represent ~~by far~~ the highest number of charging and discharging cycles~~, it is general practice to~~ . Embodiments of the invention use, for generating the sustain pulses, generators having resonant circuits which allow the capacitive energy between the electrodes to be recovered and re-injected.

~~The application of voltage~~ Voltage pulses are applied between the electrodes of the different arrays of the panel for driving this panel, [[,]] suitable for good video image display and accommodate the ~~need to recover the~~ recovery of capacitive energy in order to maintain satisfactory efficiency [[,]] . To accomplish this sometimes means that complex and expensive circuits ~~have to be~~ are used~~; the object of the invention is particularly to provide~~ . The invention provides supply and drive means that are less expensive than those of the prior art ~~and to provide an~~ . The invention further provides advantageous drive method suitable for these means.

For this purpose, the subject of the invention is supply and drive means for an AC plasma panel ~~with~~ . In some embodiments of the invention a memory effect is provided. One embodiment of the invention~~, which~~ comprises[[:

-]] two parallel plates leaving between them a space containing a discharge gas. [[;

-]] ~~a~~ A first and at least a second array of sustain electrodes are associated in pairs of an electrode of the first array and of an adjacent electrode of the second array so that the electrodes of the same pair define between them a succession of luminous discharge regions in the space between the plates. [[;

-]] ~~a~~ A dielectric layer ~~covering~~ covers at least one of the said sustain arrays in order to provide the memory effect[[,]] according to one embodiment of the invention.

~~characterized in that these means comprise:~~

~~-at~~ At least one transformer ~~each~~ is provided. At least one transformer comprises ~~comprising~~ a primary circuit and a ~~plurality of~~ at least one secondary ~~circuits~~ circuit magnetically coupled to the ~~said~~ primary circuit. At least one transformer is ~~and each~~ provided with a high terminal and a low terminal. In one embodiment of the invention, the high and low terminals are configured ~~that are intended~~ to be connected[[,]] without an intermediate switch, to one of the electrodes of a pair of the said panel and to the other, respectively. [[;

-]] Embodiments of the invention include a primary sustain voltage pulse generator ~~at the~~ coupled to terminals of the primary circuit or circuits of the at least one transformer. ~~, which is designed so that:~~

[[-]] In one embodiment of the invention, each secondary circuit is magnetically coupled to the primary circuit or circuits, and can deliver, between its high terminal and its low terminal, a succession of pulses having alternately high and low plateaus. The pulses are capable of causing, for example, during these plateaus, luminous discharges ~~only~~ in the discharge regions ~~which are~~ located between the electrodes connected to these terminals and which have been preactivated. [[,

-]] In one embodiment of the invention, the inductances of the primary circuit or circuits and of the secondary circuits of the transformer(s) cooperate so as to recover and re-inject the capacitive energy between the said electrodes.

~~The~~ In one embodiment of the invention, discharge regions are preactivated ~~in a manner known per se, especially~~ using selective addressing means~~; the~~ . The memory effect allows each preactivated discharge region to remain activated after each discharge. ~~; advantageously and conventionally~~ Advantageously, the discharges

take place during the sustain pulse holds so as to obtain a reproducible and useable memory effect[[;]] . According to one embodiment of the invention, during these holds, the sustain voltage is approximately constant.

~~The~~ In one embodiment of the invention, the turns ratio of the transformer(s) ~~is~~ are designed so that the voltage pulses applied to the primary circuit(s) cause sustain voltage pulses of suitable amplitude at the terminals of the secondary circuits, that is to say between the sustain electrodes~~; the~~ . The term "suitable amplitude" is understood to mean an amplitude allowing discharges to be obtained ~~only~~ in the discharge regions that have been supplied by these electrodes and have been preactivated. In one embodiment of the invention suitable amplitude refers to amplitudes allowing discharges only in the discharge regions, and not in other areas.

~~As in conventional methods, the~~ The capacitive energy is recovered and re-injected between each sustain pulse half-cycle~~; this~~ . This is accomplished by means of an inductive-capacitive resonant circuit comprising capacitors, such as that of the panel, and inductors; according to the invention, the inductance of each circuit is formed by that of the corresponding transformer; preferably, the panel supply and drive means include no other specific inductance for recovering and re-injecting capacitive energy than those of the primary circuit(s) and of the secondary circuit(s) of the transformer(s).

The transformers thus have two functions and the panel supply and drive means are particularly inexpensive.

For matching the primary voltage pulse generator, suitably controlled switches and diodes are used in particular, as will be explained later in the detailed embodiments of the invention, in which these switches will be regarded as means for connecting the generator to the primary circuits.--

Please **add** the following **new** paragraphs after the paragraph ending on line 26 on page 4:

-- Referring to the drawing figures, two parallel plates (2, 3) leave between them a space (4) containing a discharge gas. A first and at least a second array (Y, Y') of sustain electrodes associated in pairs (P_{gi}) of an electrode (Y_{gi}) of the first array and of an adjacent electrode (Y'_{gi}) of the second array so that the electrodes (Y_{gi}, Y'_{gi}) of the same pair (P_{gi}) define between them corresponding respective luminous discharge regions ($C_{1\text{-}gi}$, ..., $C_{k\text{-}gi}$, ..., $C_{P\text{-}gi}$) in the space between the plates. At least one

dielectric layer covering at least one of the said arrays of sustain electrodes. At least one transformer (T_g) each comprises at least one primary circuit (P_g) and at least one secondary circuit (S_{gi}) coupled to the said primary circuit (P_g) such that said at least one transformer provides a pulses capable of generating luminous discharges in said discharge regions. In one embodiment of the invention luminous discharges are substantially generated only in the discharge regions.

In one embodiment of the invention, a high terminal (SH_{gi}) and a low terminal (SB_{gi}) are coupled to one of the electrodes of a pair (P_{gi}) of the said panel and to the other, respectively. A primary sustain voltage pulse generator coupled to the primary circuit or circuits (P_g) of the at least one transformer (T_g). The generator is designed so that each secondary circuit (S_{gi}) magnetically coupled to the primary circuit or circuits (P_g) can deliver, between its high terminal (SH_{gi}) and its low terminal (SB_{gi}), a succession of pulses having alternately high and low plateaus capable of causing, during these plateaus, luminous discharges only in the discharge regions which are located between the electrodes (Y_{gi}, Y'_{gi}) connected to these terminals and which have been preactivated.

Inductances of the primary circuit or circuits and of the secondary circuits of the transformer(s) (T_g) cooperate so as to recover and re-inject the capacitive energy between the said electrodes (Y_{gi}, Y'_{gi}).

According to one embodiment of the invention, supply and drive means for a plasma panel are characterized in that they include no other specific inductance for recovering and re-injecting the said capacitive energy than those of the primary circuit(s) and of the secondary circuit(s) of the transformer(s) (T_g).

According to one embodiment of the invention, supply and drive means are characterized in that they comprise, write or erase means designed to apply a write voltage pulse (V_E) or erase voltage pulse to the secondary circuit (S_{gi}) supplying the said pair of electrodes (P_{gi}). This serves the purpose of selectively activating or deactivating beforehand at least any one discharge region ($C_{k\text{-}gi}$) of the panel located between the electrodes of a sustain pair (P_{gi}),

According to one embodiment of the invention, the supply and drive means are characterized comprise a plurality of H transformers (T_g). The write or erase means comprise a combination of L line drivers (11), each driver configured to apply a write voltage pulse (V_E) or erase voltage pulse to a plurality of H secondary circuits

(S_{gi}) and being, for this purpose, connected via an output to an intermediate address terminal for addressing a single secondary circuit (S_{gi}) for each of the H transformers (T_g), each address terminal being positioned, in its secondary circuit (S_{gi}), between its high terminal (SH_{gi}) and its low terminal (SB_{gi}), and L corresponding to a number of lines equal to the total number of pairs of electrodes (P_{gi}) of the panel (1) divided by the number H of transformers (T_g).

According to one embodiment of the invention supply and drive means furthermore include a write or erase bias pulse generator coupled to the primary circuits (P_g) of the transformers (T_g), which are designed so that the inductances of the primary circuits and of the secondary circuits of the transformers (T_g) cooperate in generating a reverse bias pulse after each bias pulse, so as to obtain a train of write or erase oscillations which is formed from successions of a write or erase bias pulse and of a reverse bias pulse.

According to an embodiment of the invention, write or erase means are designed so that each write voltage pulse (V_E) or erase voltage pulse applied to any one secondary circuit (S_{gi}) is applied while a write or erase bias pulse is applied to the primary circuit (P_g) magnetically coupled to the said secondary circuit (S_{gi}).

According to an embodiment of the invention, write or erase means are designed to apply a plurality of write voltage pulses (V_E) or erase voltage pulses to various secondary circuits coupled to the same primary circuit during a bias pulse applied to the said primary circuit.

According to one embodiment of the invention supply and drive means comprise means for triggering a train of write or erase oscillations in a primary circuit and means for triggering each new train of bias oscillations of another primary circuit (P_g) immediately at the end of the first bias pulse of the previous train of oscillations.

An embodiment of the invention provides an Image display system, comprising an AC plasma panel (1) with memory effect. The system comprises at least two parallel plates (2, 3) having between them a space (4) containing a discharge gas. At least a first and at least a second array (Y, Y') of sustain electrodes are associated in pairs (P_{gi}) of an electrode (Y_{gi}) of the first array and of an adjacent electrode (Y'_{gi}) of the second array so that the electrodes (Y_{gi},Y'_{gi}) of the same pair (P_{gi}) define between them a succession of luminous discharge regions ($C_{1\text{-}gi}$, ..., $C_{k\text{-}gi}$, ..., $C_{P\text{-}gi}$) in the space between the plates.

According to an embodiment of the invention, a dielectric layer covers at least one of the said sustain arrays in order to provide the memory effect.

The Image display system according to one embodiment of the invention includes no switch between the high terminal (SH_{gi}) and the low terminal (SB_{gi}) of each secondary circuit (S_{gi}) and the electrodes of the pair (P_{gi}) to which these terminals are connected.

According to one embodiment of the invention, at least one transformer (T_g) is placed on and fixed to the outer face of one of the said plates.

In embodiments of the invention, each transformer (T_g) is positioned on the said outer face at a height corresponding to the mean height of the pairs of electrodes (P_{gi}) which are connected to its secondary circuits.--

Please **delete** the following paragraphs beginning at line 5 on page 9:

~~-- The invention will be more clearly understood on reading the description which follows, given by way of non-limiting example and with reference to the appended figures in which:~~

~~- Figure 2 is a schematic front view of a panel according to a first embodiment of the invention; Figure 1 is a partial section of this panel and of a magnetic coupling transformer placed on and fixed to the external face of the rear plate of this panel;~~

~~- Figure 3 is a schematic rear view of the panel of Figures 1 and 2, also showing the supply and drive means for this panel;~~

~~- Figures 4 to 7 relate to the sustain phase for driving the panel of Figures 1 to 3 according to a first embodiment of the invention and depict the whole of a sustain period, namely respectively a first time for storing inductive energy, a second time for recovering inductive energy, a second time for storing inductive energy and a first time for recovering inductive energy;~~

~~- Figures 8 and 9 relate to the address phase for driving the panel of Figures 1 to 3 according to the first embodiment of the invention, illustrate the bias oscillation regime of the coplanar electrodes of the panel during this phase and depict the state of the line and column drivers and of the supply circuits for one of the transformers of the panel, during the first half-wave and during the second half-wave of an oscillation, respectively;~~

~~- Figure 10 depicts schematically the voltage timing diagrams for electrodes belonging to three different arrays Y, Y' and X of the panel of Figures 1 to 3;~~

~~- Figure 11 depicts in more detail than in Figure 10 the voltages applied to the coplanar electrodes of the panel of Figures 1 to 3 during the address phase;~~

~~- Figure 12 depicts in more detail than in Figure 10 the voltage difference between the coplanar electrodes of the panel of Figures 1 to 3 during the sustain phase;~~

~~- Figures 13A to 15A relate to the sustain phase for driving the panel of Figure 19 according to a second embodiment of the invention and depict one half of a sustain period, namely, respectively, a first time for storing inductive energy, a first time for reversing the polarities and a second time for recovering inductive energy; Figures 13B to 15B depict the square-wave voltage signal and the intensity of magnetization during a sustain period, the bold line portion corresponding to the time depicted in the figure lying opposite this period;~~

~~- Figures 16A to 18A relate to the address phase for driving the panel of Figure 19 according to a second embodiment of the invention and depict one half of an oscillation period for biasing the coplanar electrodes of the panel during this phase, namely respectively a first time for storing inductive energy, a first time for reversing the polarities and a second time for recovering inductive energy; Figures 16B to 18B depict the square-wave voltage signal and the intensity of magnetization during a bias oscillation period, the bold line portion corresponding to the time depicted in the figure lying opposite this period;~~

~~- Figure 19 depicts, in a form identical to that of Figure 1, the plasma panel according to the second embodiment of the invention; and~~

~~- Figure 20 is another representation of Figure 11 relating to the address phase.~~ --

Please **replace** the paragraphs beginning at page 32, line 11 with the following **rewritten** paragraphs:

-- The present invention has been described with reference to a drive method in which the sustain signals are applied only between coplanar electrodes; the invention also applies to drive methods in which the coplanar sustain discharges are triggered by "matrix" discharges which are initiated between the plates of the panel and which assume the application of sustain signals also to the data electrodes during the sustain phases. Such methods ~~are known in the prior art and~~ make it possible,

provided that the distance or gap separating the coplanar electrodes is increased, for the luminous yield to be substantially improved.

Another ~~essential~~ advantage of the plasma display panel provided with arrays of sustain electrodes and provided with supply and drive means according to the invention is, as the drive method that has just been described illustrates, to be able to ~~completely~~ substantially dissociate, with regard to supplying the sustain electrodes, on the one hand, the application of the power pulses, such as the sustain and coplanar write bias pulses, and, on the other hand, the application of the write pulses, while still using, as in the prior art, an array of electrodes Y both for the sustaining and the addressing.--

Please **add** the following **new** paragraph after the paragraph ending on line 5 on page 34:

-- While foregoing is directed to various embodiments of the present invention, including preferred embodiments, other and further embodiments of the invention may be devised without departing from the basic scope thereof, and the scope thereof is determined by the claims that follow.--